LCD / LCM SPECIFICATION

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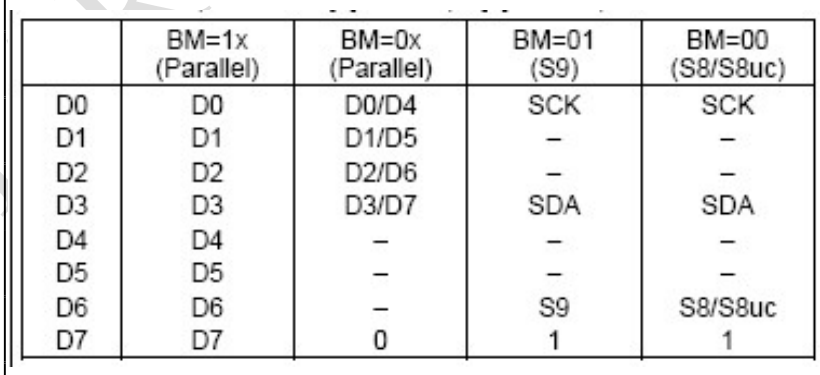
RX240128A

General Specification

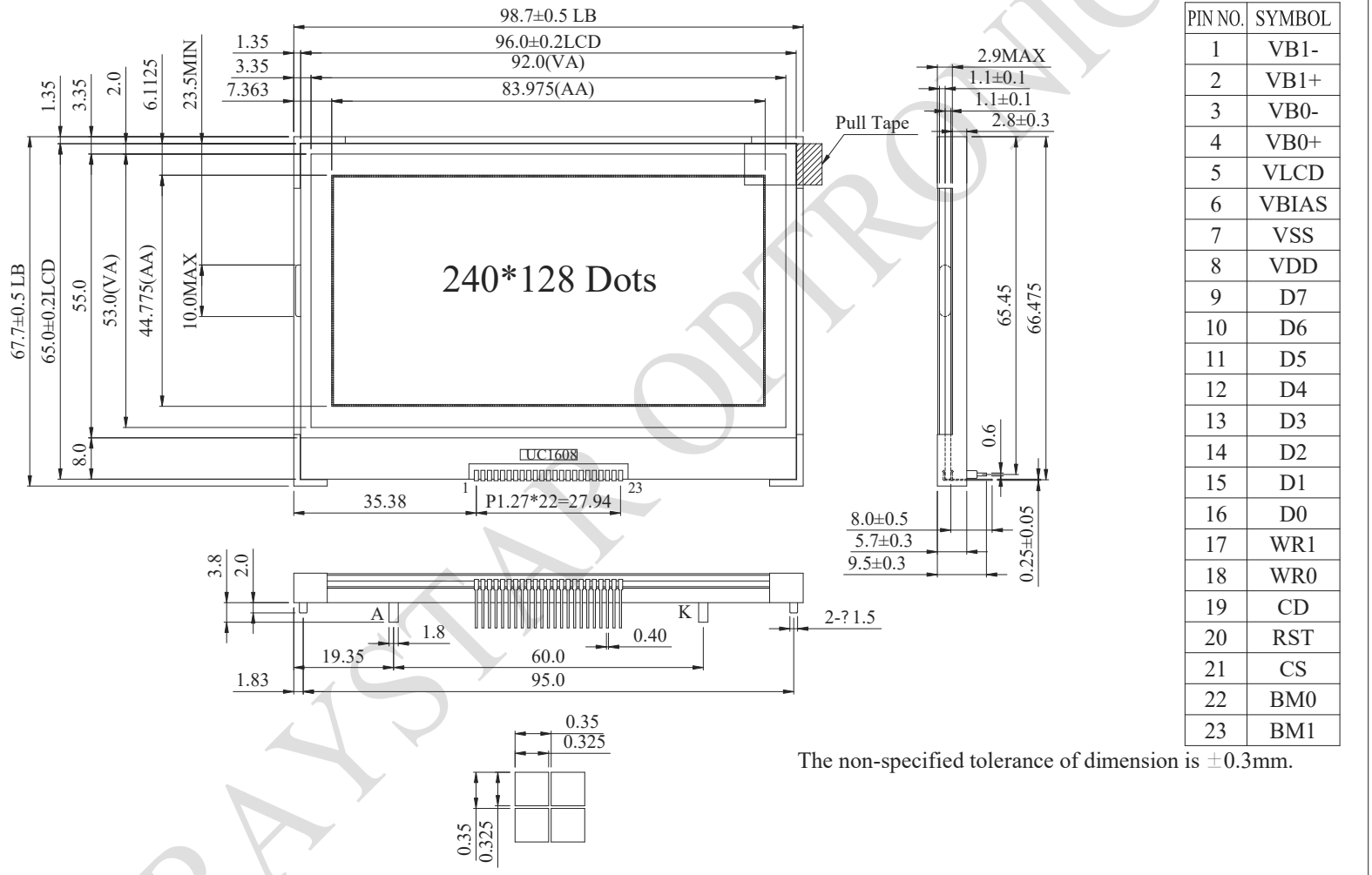
- Module dimension: 98.7 x 67.7 x 9.5 mm
- View area: 92.0 x 53.0 mm
- Active area: 83.975 x 44.775 mm
- Number of dots: 240 x 128
- Dot size: 0.325 x0.325 mm
- Dot pitch: 0.35 x 0.35 mm
- Duty: 1/128
- Backlight Type: LED
- IC: UC1608
- Interface: 6800/8080/3 wire SPI/4 wire SPI

Interface Pin Function

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Type</th><th>Description</th></tr>
<tr><td>1</td><td>VB1-</td><td rowspan="4">PWR</td><td rowspan="4">LCD Bias Voltages. These are the voltage source to provide SEG driving currents. These voltages are generated internally. Connect capacitors of CBX between VBX+ and VBX–.
The resistance of these four traces directly affects the SEG driving strength of the resulting LCD module. Minimize the trace resistance is critical in achieving high quality image.</td></tr>
<tr><td>2</td><td>VB1+</td></tr>
<tr><td>3</td><td>VB0-</td></tr>
<tr><td>4</td><td>VB0+</td></tr>
<tr><td>5</td><td>VLCD</td><td>PWR</td><td>Main LCD Power Supply. Connect these pins together.</td></tr>
<tr><td>6</td><td>VBIAS</td><td>I</td><td>This is the reference voltage to generate the actual SEG driving voltage. VBIAS can be used to fine tune VLCD by external variable resistors. Internal resistor network has been provided to simplify external trimming circuit.
In COF application, connect a small bypass capacitor between VBIAS and VSS to reduce noise.</td></tr>
<tr><td>7</td><td>VSS</td><td>PWR</td><td>Ground</td></tr>
<tr><td>8</td><td>VDD</td><td>PWR</td><td>Supply Voltage for logic</td></tr>
<tr><td>9</td><td>D7</td><td rowspan="8">I/O</td><td rowspan="8">Bi-directional bus for both serial and parallel host interfaces.
In serial modes, connect D[0] to SCK, D[3] to SDA,
 
<table>
<tr><th></th><th>BM=1x
(Parallel)</th><th>BM=0x
(Parallel)</th><th>BM=01
(S9)</th><th>BM=00
(S8/S8uc)</th></tr>
<tr><td>D0</td><td>D0</td><td>D0/D4</td><td>SCK</td><td>SCK</td></tr>
<tr><td>D1</td><td>D1</td><td>D1/D5</td><td>–</td><td>–</td></tr>
<tr><td>D2</td><td>D2</td><td>D2/D6</td><td>–</td><td>–</td></tr>
<tr><td>D3</td><td>D3</td><td>D3/D7</td><td>SDA</td><td>SDA</td></tr>
<tr><td>D4</td><td>D4</td><td>–</td><td>–</td><td>–</td></tr>
<tr><td>D5</td><td>D5</td><td>–</td><td>–</td><td>–</td></tr>
<tr><td>D6</td><td>D6</td><td>–</td><td>S9</td><td>S8/S8uc</td></tr>
<tr><td>D7</td><td>D7</td><td>0</td><td>1</td><td>1</td></tr>
</table>
Connect unused pins to VDD or VSS.</td></tr>
<tr><td>10</td><td>D6</td></tr>
<tr><td>11</td><td>D5</td></tr>
<tr><td>12</td><td>D4</td></tr>
<tr><td>13</td><td>D3</td></tr>
<tr><td>14</td><td>D2</td></tr>
<tr><td>15</td><td>D1</td></tr>
<tr><td>16</td><td>D0</td></tr>
<tr><td>17</td><td>WR1</td><td rowspan="2">I</td><td rowspan="2">WR[1:0] controls the read/write operation of the host interface. See Host Interface section for more detail.
In parallel mode, WR[1:0] meaning depends on whether the interface is in the 6800 mode or the 8080 mode. In serial interface modes, these two pins are not used, connect them to VSS.</td></tr>
<tr><td>18</td><td>WR0</td></tr>
<tr><td>19</td><td>CD</td><td>I</td><td>Select Control data or Display data for read/write operation. In S9 mode, CD pin is not used. Connect CD to VSS when not used. ”L”: Control data ”H”: Display data</td></tr>
</table>

<table>
<tr><td>20</td><td>RST</td><td>I</td><td>When RST=”L”, all control registers are re-initialized by their default states.
Since UC1608x has built-in Power-ON-Reset and Software Reset command, RST pin is not required for proper chip operation. When RST is not used, connect the pin to VDD.</td></tr>
<tr><td>21</td><td>CS</td><td>I</td><td>Chip Select. The chip is selected when CS=”H”. When the chip is not selected, D[7:0] will be high impedance.</td></tr>
<tr><td>22</td><td>BM0</td><td rowspan="2">I</td><td rowspan="2">Bus mode: The interface bus mode is determined by BM[1:0] and D[7:6] by the following relationship:
<table><tr><th>BM[1:0]</th><th>D[7:6]</th><th>Mode</th></tr><tr><td>11</td><td>Data</td><td>6800/8-bit</td></tr><tr><td>10</td><td>Data</td><td>8080/8-bit</td></tr><tr><td>01</td><td>0X</td><td>6800/4-bit</td></tr><tr><td>00</td><td>0X</td><td>8080/4-bit</td></tr><tr><td>01</td><td>10</td><td>3-wire SPI w/ 9-bit token
(S9: conventional)</td></tr><tr><td>00</td><td>10</td><td>4-wire SPI w/ 8-bit token
(S8: conventional)</td></tr><tr><td>00</td><td>11</td><td>3- or 4-wire SPI w/ 8-bit token
(S8uc: Ultra-Compact)</td></tr></table></td></tr>
<tr><td>23</td><td>BM1</td></tr>
</table>

Contour Drawing



PIN NO.	SYMBOL
1	VB1-
2	VB1+
3	VB0-
4	VB0+
5	VLCD
6	VBIAS
7	VSS
8	VDD
9	D7
10	D6
11	D5
12	D4
13	D3
14	D2
15	D1
16	D0
17	WR1
18	WR0
19	CD
20	RST
21	CS
22	BM0
23	BM1

The non-specified tolerance of dimension is ±0.3mm.

Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	–	+70	℃
Storage Temperature	T_{ST}	-30	–	+80	℃
Logic supply voltage	V_{DD}	-0.3	–	+4.0	V
LCD Generator supply voltage	$V_{DD}2$	-0.3	–	+4.0	V
LCD Generated voltage	V_{LCD}	-0.3	–	+17.0	V

Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	V_{DD}-V_{SS}	–	2.7	2.8~3.3	3.6	V
Supply Voltage For LCM	V_{LCD}	Ta=-20℃	–	–	–	V
		Ta=25℃	15.2	15.5	15.8	V
		Ta=70℃	–	–	–	V
Input High Volt.	V_{IH}	–	0.8 V_{DD}	–	–	V
Input Low Volt.	V_{IL}	–	–	–	0.2 V_{DD}	V
Output High Volt.	V_{OH}	–	0.8 V_{DD}	–	–	V
Output Low Volt.	V_{OL}	–	–	–	0.2 V_{DD}	V
Supply Current(No include LED Backlight)	I_{DD}	V_{DD}=3.0V	–	1.1	–	mA